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GONTSOV, N. G.

UDC 536.46:533.6

"Thermal and Mass Exchange in a System of Turbulent Jets in the Presence of Diffusing Combustion"

Trudy Leningradskogo Politekhnicheskogo Instituta, Aerotermodinamika (Works of the Leningrad Polytechnical Institute, Aerothermodynamics), No 313, 1970, pp 82-89

Translation: This article contains a study of the motion of chemically active gases not mixed in advance in a system of an infinite number of circular turbulent jets in the presence of diffusion combustion. The proposed calculation method permits determination of the distribution of all the parameters and the shape of the flame.

The problem is solved in the approximation of the boundary layer with arbitrary but equal values of the turbulent analogs of the Prandtl and Schmidt numbers. Linearization in the plane of the generalized Prandtl-Mises variables leads to the boundary problem for the linear

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equation of thermal conductivity the solution of which has the form of a series. The necessity of using one hypothesis or another with respect to the relation of the turbulent transport coefficients to the parameters of average motion occurs only in the final stage of the calculation -- on converting to the plane of physical variables. There are four illustrations and a four-entry bibliography.

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VIKULINA, L. F., GONYAYEV, G. S., LYUZE, L. L., FEDOROV, Ye, V., SHIROKOVA, L. S.

"Investigation of the 'Second Threshold' Effect in Gallium Arsenide Cavity Oscillators"

Moscow, Radiotekhnika i Elektronika, Vol 16, No 1, Jan 71, pp 131-133

Abstract: An attempt is made to explain the "second threshold" effect reported by Gunn in 1966. The essence of this phenomenon is that an abrupt change in the frequency of oscillations takes place with an accompanying reduction in the average current through some gallium arsenide specimens when the bias voltage exceeds a certain value. The following mechanism is proposed as an explanation of the effect. At bias voltages between the threshold value and the "second" threshold, the specimen is operating in a "resonance-drift" mode. The overall voltage during the negative part of the cycle of the variable component falls below the threshold value, which delays the time for formation of a new domain. Above a certain bias voltage, which differs for different specimens, the amplitude of the variable component may be too small, that the overall voltage does not fall below the threshold value. Thus there

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